Simian foamy virus found in several people living and working with monkeys in Asia

July 31 2008

A research team led by University of Washington scientists has found that several people in South and Southeast Asian countries working and living around monkeys have been infected with simian foamy virus (SFV), a primate virus that, to date, has not been shown to cause human disease. The findings provide more evidence that Asia, where interaction between people and monkeys is common and widespread, could be an important setting for future primate-to-human viral transmission. The study appears in the August issue of the journal *Emerging Infectious Disease*.

Though SFV has not been found to cause any human disease, it is a slow-acting retrovirus, so it could take many years before scientists determine the effects of infection. SFV could also change at the genetic level, resulting in a new strain of the virus that would affect humans. Scientists believe that a similar process occurred with HIV, which probably originated as a virus in non-human primates in Africa before jumping the species barrier to human hosts.

In this study, researchers from the University of Washington visited several countries in Asia, interviewing and testing about 300 people who live or work closely with any one of several species of small-bodied monkeys called macaques. Eight of those participants tested positive for SFV.

The people who had contracted the virus came from a variety of places and contexts: one person lived in an urban area in Bangladesh that had a

large monkey population, for instance, while two other people lived near a monkey temple in Thailand. Monkey temples are places of religious worship that have become refuges for populations of primates.

Though much of the research on viral transmission between humans and other primates has focused on Africa, UW researcher Dr. Lisa Jones-Engel has led multiple studies examining the issue in Asia. Some Asian countries are prime areas for viral transmission between monkeys and humans, she explained, because of the huge populations of both and the widespread interaction between the species. People are in close contact with monkeys in many settings in Asia: in cities, religious temples, open-air markets, street performances, nature preserves, hunting areas, zoos, and even homes, where monkeys are kept as pets.

"So much of the focus on this issue has been in Africa, but there, the interface between humans and other primates is decreasing," said Jones-Engel, a senior research scientist in the Division of International Programs at the UW's Washington National Primate Research Center. "The intensity of bush meat hunting and infectious diseases have taken a huge toll on primate populations there. Individuals in Africa who are interacting with other primates are often very isolated from other humans – they live in small, rural villages, which limits the potential spread of pathogens."

In Asia, however, monkeys are often respected or revered because of cultural and religious traditions. The rapid expansion of cities and the decline of wild habitats have driven many monkey populations into urban areas, Jones-Engel said, where they interact more closely with large, interconnected populations of people.

In one state in northern India, for example, researchers estimate that more than a quarter-million rhesus macaques, or about 86 percent of the wild population, live in urban areas because of habitat loss. Unlike the

great apes, such as chimpanzees or gorillas, rhesus macaques and other species of monkeys are very adaptable to new habitats.

"Some macaque species thrive in human-altered environments, given the tolerance of the local people," said Dr. Gregory Engel, clinical assistant professor of family medicine at the UW and a co-author on this study.

The group's findings support the notion that viral transmission could occur in any one of many settings in Asia, from religious temples to urban areas, and that the issue could affect many different people, from temple workers to pet owners. One of the people infected was a farmer in Thailand who had trained monkeys to help him harvest coconuts.

"This is a heterogeneous sample – subjects reported contact with primates in a variety of contexts," explained Gregory Engel, who is also a physician at Swedish Medical Center in Seattle. "It seems that some of these contexts are going to be very important, but they haven't been studied much. Zoo workers and bush meat hunters have been typically considered at the highest risk for viral transmission, but none of the zoo workers or hunters in our sample tested positive for SFV."

The researchers suggest that better disease monitoring and further study of monkey-human interaction could help cut down on the risks associated with viral transmission. People living, working, or visiting areas of Asia with monkey populations can also reduce their risk by limiting their close contact with the animals. Tourists can reduce their risk by wearing long pants around monkeys, and by not trying to feed, pet, or hold the animals.

Source: University of Washington